

Characterizing and Communicating Confidence and Uncertainty in the NCA

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Motivation for NCA Guidance

- The NCA must assess and communicate the state of our understanding and the level of confidence with which we can make projections of climate change and its impacts
- Sound decision making that anticipates, prepares for, and responds to climate change depends on information about the full range of possible consequences and associated probabilities

Qualifiers mean different things to different people

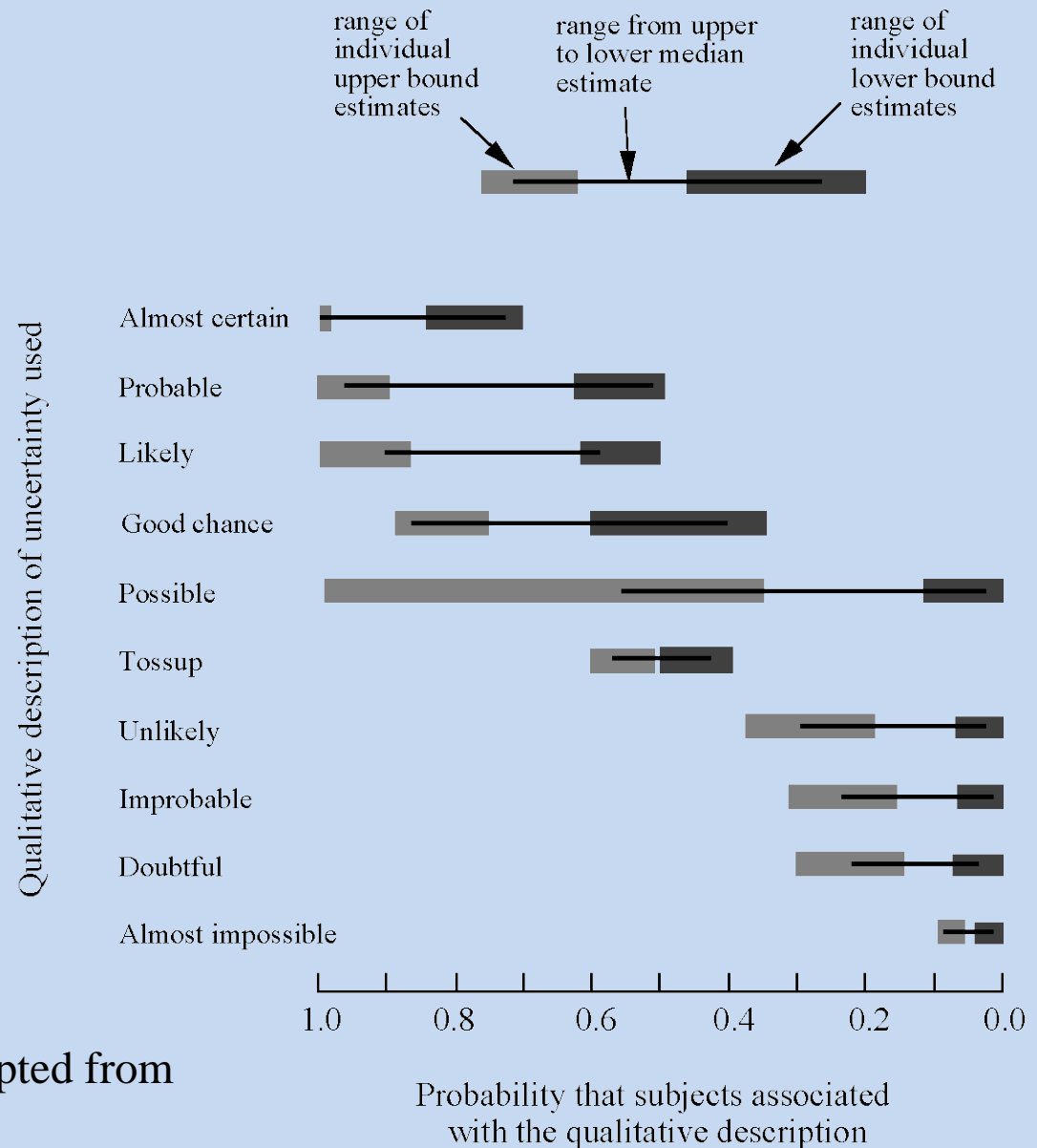


Figure from G. Morgan, adapted from Wallsten et al., 1986

Uncertainty Guidance Objective

- Provide practical guidance for authors of the NCA regarding approaches for evaluating levels of confidence and sources of uncertainty
- Provide a shared approach for communicating levels of confidence and uncertainties to users of the assessment results

Foundation for Guidance

- Draw on IPCC uncertainty guidance, prior USGCRP and CCSP reports, and current research literature in decision science and risk communication

Status

- Initial discussion during July 6-7 Executive Committee meeting
- Draft guidance prepared
 - Criteria include appropriate for impacts/adaptation, practicality
- Informal review by decision science and risk communication experts
- Review and discussion at SW region technical report workshop
- Draft and decision options prepared for NCADAC consideration

Overview of Guidance

- Assessing and applying the literature to stakeholder questions
- Characterizing confidence
- Communicating confidence in findings to stakeholders

Assessing and Applying the Literature to Stakeholder Questions

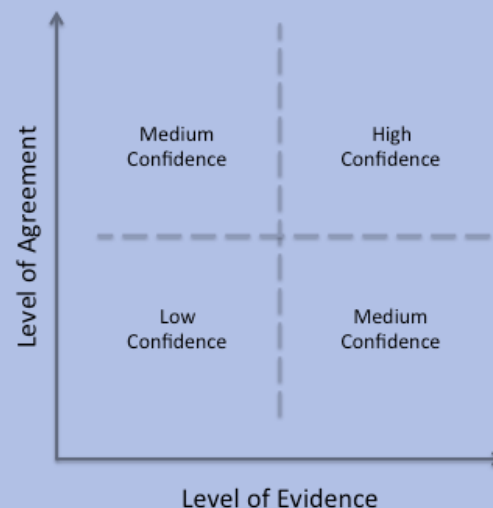
1. Working with stakeholders, identify a small number of key questions (3-4) that are of greatest importance from among the topics considered in your chapter
2. Carefully review the literature and develop answers, quantitative whenever possible
 - Provide ranges of estimates that reflect uncertainties, considering the tails of the distribution and possible outliers
 - After establishing the range and identifying outliers, provide a “best estimate” if appropriate
 - Include information on potential high consequence impacts important to stakeholders

Characterizing Confidence

3.-4. Assess the degree of confidence of the lead authors in the finding, considering (a) quality of evidence and (b) level of agreement across the community of experts

- Multiple lines of evidence (e.g., supporting theory, observations, and model results) should result in a rating of “strong evidence”
- Optional: Array main findings of the executive summary within the matrix

Summary Evaluation of Confidence: Evidence and Agreement



**National
Climate
Assessment**

U.S. Global Change Research Program

Examples from Extreme Events Meeting

(informal from Tom Karl; 8/15/11)

▲ Heavy precipitation events

● Hurricanes

Summary Evaluation of Confidence: Evidence and Agreement



Communicating Confidence in Findings to Stakeholders

5. For each of the issues identified in step 1, prepare a summary “**traceable account**” (a few sentences to a paragraph) that describes the main factors that contributed to the conclusion and level of confidence
6. In addition to providing a summary traceable account, use the appropriate term below in a parenthetical phrase following the finding to convey to readers the level of confidence associated with the finding

Low Confidence

Medium Confidence

High Confidence

NCA Decision Options

1. Review draft guidance and approve guidelines for authors
2. Add experts in decision science and risk communication to key chapters
 - Executive Secretariat to propose key chapters for NCADAC approval, using issues highlighted in the Global Change Research Act
3. Undertake expert elicitations key issues
 - Executive Secretariat to propose key issues for NCADAC approval
4. Include evaluation component to improve approaches in future assessments
 - Executive Secretariat to propose approach for NCADAC approval

DISCUSSION

BACK-UP SLIDE

“Cascade of Uncertainty”

